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Three new Afrotropical *Cardiocondyla* Emery, with a revised key to the workers
(Hymenoptera Formicidae)

Abstract - Three new Afrotropical species belonging to the myrmicine genus *Cardiocondyla* Emery are described: *C. longinoda* **n. sp.**, *C. luciae* **n. sp.** and *C. yoruba* **n. sp**. A revised key to the workers of Afrotropical *Cardiocondyla* is provided.

Riassunto - *Tre nuove* Cardiocondyla *afrotropicali, con una chiave aggiornata per le operaie.* Tre nuove specie afrotropicali del genere mirmicino *Cardiocondyla* sono descritte: *C. longinoda* **n. sp.**, *C. luciae* **n. sp.** and *C. yoruba* **n. sp**. Viene fornita anche una chiave aggiornata per le operaie.

Key words: *Cardiocondyla*, new species, Afrotropical, key

Introduction

Cardiocondyla is a moderate size genus with 38 known species (Bolton, 1995) occurring all around the world; only the Australasian zoogeographical region seems to be without native taxa. Yet Seifert (pers. comm.) estimates that there are not less than 120 species worldwide including many undescribed forms.

Bolton (1982) revised the Afrotropical species and gave a key to the 9 species known from the area.

Recently I received a single worker from Tanzania, which looked quite distinct from any other taxon known from the region. To this specimen I was able to add a few samples of two further undescribed Afrotropical taxa borrowed from other specialists.

In this paper I give a description of the new taxa and an updated key to the workers.

Measurements and indices are as in Bolton (1982) and have been taken using a Wild M3C stereomicroscope with an ocular graticule.

Depositories

BMNH: The Natural History Museum, London, UK.
MSNM: Museo Civico di Storia Naturale di Milano, Italy.
SAM: South African Museum, Cape Town, South Africa.

Cardiocondyla longinoda n. sp. (figs 1-3)

Holotype worker. TL 2.1, HL 0.49, HW 0.39, CI 80, SL 0.38, SI 97, PW 0.28, AL 0.60.

A slender and pale species with long appendages. In full face view head relatively elongate with a hardly concave occipital margin and anterior clypeal lobe with an almost straight anterior edge. Maximum eye diameter 0.13 mm (14 ommatidia in the longest row). With the alitrunk in profile, the promesonotum forming a low convexity a little above the level of the propodeal dorsum; metanotal groove shallow. Pronotum seen from above with rounded humeri. Propodeum armed with two blunt and poorly developed teeth, which seen from above appear as close and stubby tubercles. Petiole with a long low node, in dorsal view is about 1.5 times longer than wide; in posterior view the node is convex. Subpetiolar process barely discernable. Postpetiole seen from above about as long as wide, clearly narrower in front than behind and a little more than 1.5 times wider than the petiole.

Mandibles shagreened and feebly longitudinally striolated, matt. Dorsum of head shagreened and finely blanketed with shallow and regular pubescence-bearing punctures. Promesonotal dorsum with a similar sculpture, but the punctures are poorly visible. Propodeum and sides of the alitrunk finely reticulate-punctate. Petiolar node and dorsum of the postpetiole finely shagreened; sides and peduncle of the petiole finely reticulate punctate. Dorsum of the gaster finely shagreened and matt with a silky appearance.

Hairs present only on the anterior border of the clypeal lobe and at the tip of the gaster. Appressed pubescence well developed especially on the head and gaster. Pubescent hairs on gaster distant from one another by about as much as their length or slightly less.

Colour testaceous yellow, with a slightly duller gaster.

PARATYPE WORKERS. TL 2.0, HL 0.48-0.49, HW 0.37-0.38, CI 77-78, SL 0.36-0.37, SI 95-100, PW 0.26-0.27, AL 0.57-0.59 (4 measured).

Specimens belonging to the same series of the holotype are just slightly smaller in size, but consistent in every other respect. Specimens coming from Mkomazi Game Reserve have a darker colour, being more ferrugineous and with slightly infuscated head and gaster. Also, the shape of the petiolar node in profile is a little different (fig. 3). In my opinion these variations could not justify any separation as a distinct taxon.

MATERIAL EXAMINED. Holotype worker: TANZANIA: Kibaha, 7-vi-1988 (A.M. Varela) [BMNH].

Paratypes: 2 workers with the same data as the holotype [BMNH]. 1 worker: TANZANIA, Mkomazi Game Reserve, near Junction 9, 3°53'S 38°02'E, 8-v-1996 (H.G. Robertson) (SAM-HYM-C009896) [SAM]. 1 worker: TANZANIA, Mkomazi Game Reserve, Pangaro plot, 3°54'S 37°47'E, 23-iv-1996 (H.G. Robertson) (SAM-HYM-C010399) [SAM].

COMMENT. A distinctive taxon, easily recognisable by its slenderness, elongate and relatively low petiolar node and shagreened gaster. The latter recalls *C. luciae* (see below), but in other respects these ants are distinct.

DERIVATIO NOMINIS. An adjective formed by two latin words, "longus" (long) and "nodus" (knot or node), given to this species for the peculiar shape of the petiolar node.

Cardiocondyla luciae n. sp. (figs 4-5)

HOLOTYPE WORKER. TL 2.1, HL 0.50, HW 0.39, CI 78, SL 0.35, SI 90, PW 0.26, AL 0.58.

A dark and slender species. In full face view head elongate, with almost parallel sides, clypeal lobe anteriorly straight, occiput notched in the middle. Maximum eye diameter 0.13 mm (14 ommatidia in the longest row). Scapes moderately long. With the alitrunk in profile the dorsal and anterior faces of the pronotum meeting at a distinct, blunt angle. Promesonotum almost flat, about at the same level of the weakly convex propodeal dorsum, metanotal groove wide and shallow. In dorsal view the pronotum has slightly angular humeri, and promesonotal sides clearly convergent toward the metanotal groove. Propodeum armed with two short teeth, wide at the base. Petiole in profile with a rounded domed node; in dorsal view the node appears somewhat drop-shaped and a little longer than wide; in posterior view its apex is blunt conical. Subpetiolar process poorly developed. In dorsal view, postpetiole nearly twice as wide as the petiole, a little wider than long and slightly narrower in front than behind.

Mandibles longitudinally striolate punctate, slightly shining. Dorsum of head shagreened, finely and regularly punctate; frons finely longitudinally striolate. Promesonotal dorsum shagreened and finely punctate, but with less distinct punctures. Sides of the alitrunk, propodeum and sides of the petiole mostly finely reticulate punctate. Dorsum of petiolar node and postpetiole shagreened; the former hardly shining. Gaster dorsally finely shagreened, matt and with a silky appearance.

Erect hairs present only on the anterior border of the clypeal lobe and at the tip of the gaster. Appressed pubescence well developed on the body and appendages, conspicuous on the head and especially on the gaster. On the first gastral tergite the pubescence is fairly abundant and a little denser than in *C. longinoda* (see above).

Colour reddish brown, gaster duller; antennae with a darkened club.

MATERIAL EXAMINED. Holotype worker: TANZANIA: Tarangire Nat. Park, Loborserit, xi-1998 (C. Polidori & L. Benaglio) [MSNM].

COMMENT. This species is distinguished from all other Afrotropical *Cardiocondyla* for its combination of dark colour, shagreened gaster, slender body and nearly flat dorsum of the alitrunk.

DERIVATIO NOMINIS: a noun in the genitive case; this species is dedicated to Lucia Benaglio who collected the single specimen described.

Cardiocondyla yoruba n. sp. (figs 6-7)

HOLOTYPE WORKER. TL 1.6, HL 0.42, HW 0.32, CI 76, SL 0.27, SI 84, PW 0.23, AL 0.45.

In full face view head rectangular, longer than wide, the sides appearing slightly convergent in front of the eyes, anterior edge of the clypeal lobe hardly emarginate and occiput weakly concave. Maximum eye diameter 0.10 mm (8 ommatidia in the longest row). With the alitrunk in profile the promesonotum, as well as the dorsum of the propodeum, forming a low convexity; metanotal groove very shallow. Pronotum in dorsal view with rounded humeri and promesonotum with posteriorly weakly

converging sides. Propodeal spines well developed, but short and with a broad base. Petiole in profile with a well developed node, in dorsal view the node is rounded and about as long as wide; in posterior view it appears widely rounded. Subpetiolar process small and protruding in front. Postpetiole in dorsal view about 1.5 times wider than long and about 1.5 times wider than the petiole.

Mandibles mostly smooth. Dorsum of the head regularly areolate, each pubescence-bearing areola finely sculptured. Dorsum of promesonotum similarly, but less regularly areolate; posteriorly and laterally the alitrunk becomes finely reticulate-punctate. Petiole and postpetiole shagreened on the dorsum, the petiole laterally finely reticulate-punctate. Gaster smooth with a very superficial sculpture near the base and regular pubescence-bearing punctulation.

Erect hairs present only on the anterior clypeal margin and at the tip of the gaster. Appressed pubescence well developed on head, gaster and appendages, less abundant on the alitrunk. On the gaster, the pubescent hairs are about as distant from one another as their length or less.

Colour testaceous with a brown gaster. Antennal club slightly infuscated.

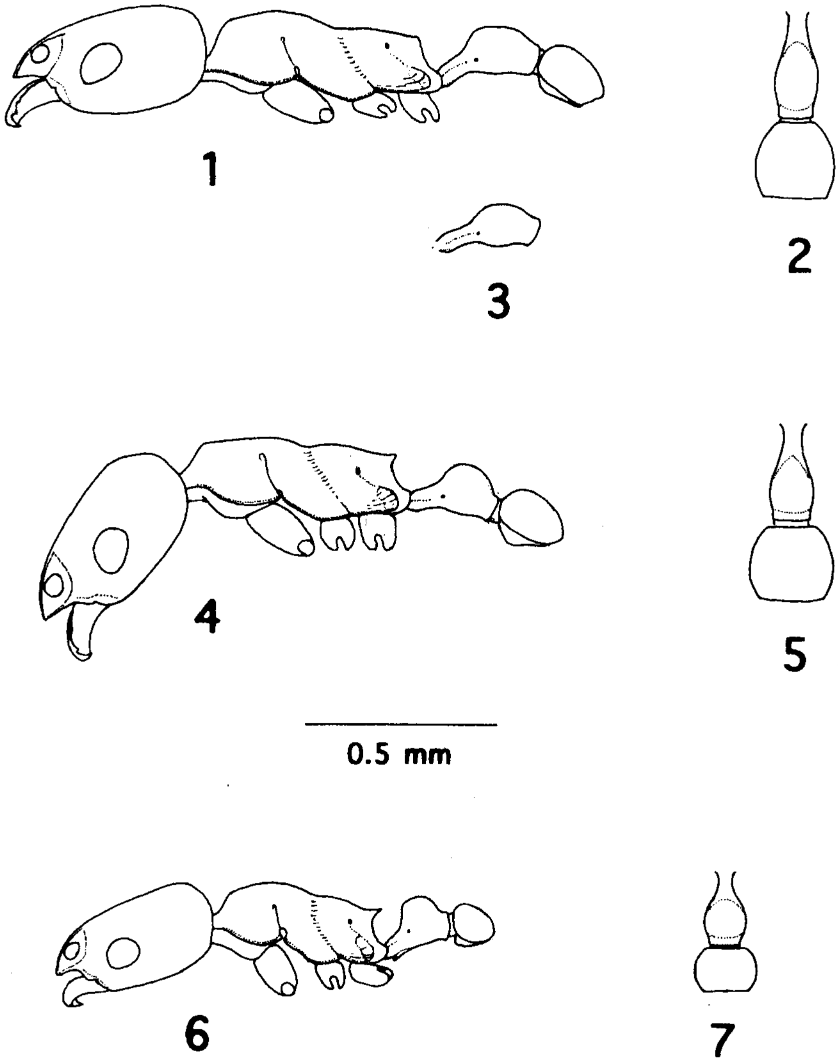
PARATYPE WORKERS. TL 1.6-1.7, HL 0.42-0.43, HW 0.31-0.33, CI 74-78, SL 0.26-0.27, SI 81-84, PW 0.21-0.24, AL 0.43-0.47 (9 measured).

Very consistent with the holotype in size, measurements, sculpture and colour. Minor variations occur in the shape of the propodeal spines, concavity of the edge of the anterior clypeal lobe. The metanotal groove is sometimes fainter in profile.

MATERIAL EXAMINED. Holotype worker: NIGERIA: Ibadan, IITA xi-1987 (J. Noyes) [BMNH]. Paratypes: 9 workers with the same data as the holotype. [BMNH]

COMMENT. No distinctive features, but with a combination of characters which make it different from any other Afrotropical *Cardiocondyla*. Its closest relative seems to be *C. emeryi* Forel from which *C. yoruba* may be easily separated by its minor size (compare measurements with those reported in Bolton, 1982), shallower metanotal groove and, in dorsal view, differently shaped petiolar node.

DERIVATIO NOMINIS. A noun in apposition: it is the name of the main human population living in SW Nigeria.



Figs 1-3. *C. longinoda* n. sp., worker (pilosity and sculpture omitted): 1 - profile of head, alitrunk, petiole and postpetiole (holotype); 2 - dorsal view of petiole and postpetiole (holotype); 3 - petiole in profile (paratype from Mkomazi Game Reserve).
Figs 4-5. *C. luciae* n. sp. (holotype), worker (pilosity and sculpture omitted): 4 - profile of head, alitrunk, petiole and postpetiole; 5 - dorsal view of petiole and postpetiole.
Figs 6-7. *C. yoruba* n. sp. (holotype), worker (pilosity and sculpture omitted): 6 - profile of head, alitrunk, petiole and postpetiole; 7 - dorsal view of petiole and postpetiole.

REVISED KEY TO THE AFROTROPICAL *CARDIOCONDYLA* (WORKERS)

1 Propodeum in profile completely unarmed. Alitrunk without any trace of a metanotal groove. Petiole with an elongate peduncle and a low node. Size large (TL 2.7). (Angola)......... ***monardi***
- Propodeum in profile at least clearly angulate. Metanotal groove usually well developed. Petiole not so elongate. Size usually distinctly smaller 2

2. With the head in full face view the scapes, when laid back, distinctly exceeding the occipital corners. (Sudan) .... ***nilotica***
- With the head in full face view the scapes, when laid back, not exceeding the occipital corners, at most just reaching them... 3

3. Dorsal surfaces of head and alitrunk smooth and unsculptured everywhere, except for widely separated minute punctula on the head. Scape short (SI 74). (Ghana)................. ***sekhemka***
- Dorsal surfaces of head and alitrunk distinctly and finely sculptured. Scape longer (SI > 80) 4

4. Dorsum of the gaster distinctly finely shagreened, not smoother than head and alitrunk 5
- Dorsum of the gaster not shagreened, smoother than head and alitrunk 6

5 Petiolar node elongate, 1.5 longer than wide in dorsal view and low, not domed, in profile. Colour mostly pale ferrugineous. Scape relatively long (SI 97-100). (Tanzania) .... ***longinoda***
- Petiolar node not so elongate, less than 1.5 longer than wide in dorsal view and domed in profile. Colour brown with a reddish tinge. Scape relatively short (SI 90). (Tanzania) .... ***luciae***

6 Propodeum in profile bluntly angulate to bidenticulate, never with a pair of strong teeth or spines. Scapes relatively long (SI 93-100). (Widespread in the Afrotropical region) .... ***shuckardi***
- Propodeum in profile at least distinctly bidentate. Scapes relatively short (SI 81-94)......... 7

7 With the alitrunk in profile the dorsum approximately flat before and behind the metanotal groove. Propodeal spines long and slender. (Cameroun).................................. ***weserka***
- With the alitrunk in profile the dorsum not flat before and behind the metanotal groove, at least slightly convex. Propodeum armed with spines or teeth of various length 8

8 Pronotal corners bluntly but conspicuously angular in dorsal view. (Ghana, Cameroun) .... ***neferka***
- Pronotal corners rounded in dorsal view.. 9

9 With alitrunk in profile the mesonotal dorsum abruptly changing slope posteriorly and descending steeply to the metanotal groove. Propodeal spines distinctly elongate. Head relatively wide, CI 79-86. (Pantropical tramp species) .... ***wroughtonii***
- With alitrunk in profile the mesonotal dorsum evenly curving into the metanotal groove. Propodeum with short spines or toothed. Head relatively narrow, CI 72-78 10

10 Metanotal groove distinctly impressed in profile. Petiolar node usually longer than wide in dorsal view, somewhat laterally compressed. Size larger, TL 1.7-2.1, HL > 0.44, AL > 0.47. (Cosmopolitan tramp species). . . . . ***emeryi***
\- Metanotal groove shallowly impressed in profile. Petiolar node globular in dorsal view, as long as wide, never compressed. Size smaller, TL 1.6-1.7, HL 0.42-0.43, AL 0.43-0.46. (Nigeria). . . ***yoruba***

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